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supreme being, that the identity of both becomes highly probable. The tribes of the southern part of Vancouver Island ascribe to the mink all the exploits that are told farther north as having been accomplished by the raven, and add a great number of others which belong to the mink alone. The Qomoks of the central part of Vancouver Island relate both traditions separately. Those of the raven refer to its voracious appetite, while those of the mink have a highly erotic character.

The Qomoks, Heiltsuk, and the Bilhula of Bentinck Arm are particularly interesting, as we may observe with them the transference of legends from one tribe to another. The Bilhula have a tradition of their own describing the origin of mountains, woods, and animals, which, though influenced by the legends of the Tlingit and Tsimpshian, has a peculiar character. They say that after the raven had created the sun, four men — Masmasalanigh, Yulatimot, Matlapalitsek, and Matlipekoagh — descended from heaven and created every thing, after which they returned. Masmasalanigh and the raven are said to be identical, and all his works originated in Yulatimot's mind. The same tradition is found among the Heiltsuk. Though they speak a dialect of the Kwakiutl, their customs and their belief are closely allied to those of the Bilhula. They say that two men, Masmasalanigh and Noakaua, descended from heaven and created every thing. Similarly the Qomoks, who belong to the Selish family, have adopted a great number of traditions and customs of the Kwakiutl.

The most important of these is the cannibalism connected with the winter dances. The custom prevails among the Kwakiutl, Tsimpshian, Bilhula, and Qomoks, and is said by some natives to be practised by the Tlingit. According to the Kwakiutl tradition, one of their ancestors descended from heaven, wearing a ring of red-cedar bark, and taught people the cannibal ceremonies. The Tsimpshian tell of a man who, in pursuit of a bear, came to a mountain that closed upon him. In the interior he learned the dances connected with the cannibal ceremonies, and taught them to his tribe after his return. This custom has evidently been adopted only by the Bilhula, as none of the Selish tribes except the Qomoks practise it. The latter have adopted only part of the ceremonies, and replace the terrible practice of devouring corpses by eating artificial ones, that are made by sewing dried halibut to a human skeleton.

Among the northern tribes originated the use of the well-known copper plates, which are highly prized, and which increase in value the more frequently they change their proprietor, and the

longer their history is. They became known to the Bilhula quite recently, and I am told by old natives that they have never been in use among the Indians at the mouth of Fraser River.

There is a remarkable difference between the social institutions of the Tsimpshian, Tlingit, and Haida, and those of the rest of the tribes. Among the former the children belong to the gens to which the mother belongs : among the latter they follow the father's gens. This fact indicates a close connection between the Kwakiutl and Selish tribes ; and, as a consideration of the languages shows some affinity of the two peoples, it is possible that the Kwakiutl are a remote branch of the Selish stock. The animal crest which prevails in the north is not found among the southern tribes. Their gentes derive their origin from a fabulous being which descended from heaven dressed in a bird's skin or in the shape of a man. Members of one gens are not allowed to intermarry, but have to take their wife or husband from another gens. In some of the tribes there are as many as from fifteen to twenty gentes.

Every tribe owns its district for fishing and hunting purposes and for gathering berries. Inside the boundaries of the tribe, each family has its own claim to certain rivers and parts of the coast, which they derive from their ancestor ; but we are far from knowing the actual distribution of tribes and gentes. Even their number and names are still doubtful in many of the districts.

The common culture which extends over tribes of a great number of linguistic stocks of the north-west coast is one of the most attractive problems of American ethnology, and one deserving a thorough study. However, the ethnological character of these Indians is disappearing rapidly through their permanent contact with the whites ; and within a few years it will be too late to collect the vast material that may readily be gathered at the present time. Puget Sound, the Selish of the interior, the Tsimpshian, are actually unknown, and an explorer may glean ample results by visiting some of these tribes, and contribute new and valuable material to American ethnology.

LONDON LETTER.

THE theory of Prof. G. H. Darwin, enunciated in a recent number of the *Fortnightly review*, that the actual origin of earthquake-shocks is usually to be traced below the bed of the sea not far from the coast, will probably receive a certain amount of confirmation when all the observations on the recent earthquake in the Riviera are collated and discussed. The steamship *Carina*, of Cardiff, off Savona, on the morning of the fatal Wednesday,

experienced a terrible motion for three or four minutes, as though the propellor had dropped off and the engines were racing terribly. Several fishermen, having noticed on the previous night unusual movements of the water on the shore-line, were afraid to go on shore to sleep.

The Lords' committee of council on education have just taken a new departure in the use of the South Kensington museum, library, and schools. Arrangements have been made for the study there, without any fees, for periods of from two to nine months, of persons engaged in those industries in which art is more or less concerned, the sole condition being that the proprietors of works in whose employ such students are, shall undertake to maintain them while they are thus engaged in studying. We trust that this is only a prelude to the employment of the science schools of the department in a similar way.

An active discussion is going on in the University of Cambridge as to the arrangement of specimens to be adopted in the new geological museum, which has yet to be built, and the site of which is still undecided. Professor Hughes heads the party which desires the stratigraphical arrangement, so as to present the earth's development at different epochs. The other party, led by Professor Newton, advocates the zoological arrangement, so as to display the development of particular orders of plants and animals; and, with this view, it desires that the new museum should be placed as close as possible to the Museum of comparative anatomy, so as to facilitate a comparison of existing types.

A year ago, Professor Langley, the distinguished American astronomer, performed an experiment in the theatre of the Royal institution to explain his theory that the true color of the sun was blue. A few nights ago, in a lecture upon 'Sunlight colors,' Captain Abney repeated this experiment, adopting Professor Langley's figures, but dispensing with his paper disks, which, he held, vitiated the result. As the result of this, he maintained that the color of the sun was very nearly that of white light seen at high elevations in a clear, dust-free atmosphere. When the spectra of sunlight on the Alps and the spectra as imagined by Professor Langley were compared, they were almost identical. In support of some of his views, Captain Abney showed a novel and beautiful experiment, called an 'artificial sunset.' Through a solution of sodium hyposulphite, a clear circle of electric light was thrown on a screen: a few drops of hydrochloric acid added to the solution precipitated the sulphur in fine particles, and first the violet, and then the blue, green, and yellow rays were successively cut off, until finally there

was the dull red of the sun setting in a wintry or a smoky sky. The effects of clearness of atmosphere on photographs were strikingly shown in Alpine and Egyptian pictures.

A serious outbreak of anthrax, or splenic-fever, recently occurred near Chelmsford, Essex, and it has communicated itself to several human subjects. Anthrax has long been known to be synonymous with that fatal human ailment 'wool-sorters' disease.' In one of the present cases a veterinary surgeon bled one of the animals, and some of the blood fell upon his shirt-sleeve. A pimple upon his arm was rubbed or scratched, and, the tiny raw spot touching the blood-stained sleeve, an unhappily successful inoculation was effected. Various possible causes of the outbreak are speculatively assigned, one being the feeding with pollard made from foreign corn.

The board of trade have appointed a committee to inquire into and report upon the desirability of electrical communication between lightships and the shore, with the special object of facilitating the saving of life at sea.

Sir Fred. Abel, the organizing secretary to the 'imperial institute,' designed to commemorate the jubilee of the reign of Queen Victoria, has addressed letters to the presidents and councils of several of the scientific societies, with a view of obtaining subscriptions to the scheme through those channels. Invitations to members to subscribe thereto have accordingly been issued by most of these bodies. Besides the institute fund, the Society of telegraph engineers appeals for separate subscriptions towards a telegraph jubilee fund, to be devoted to an entirely distinct purpose.

It is stated on excellent authority that a new and cheap insulating material and system of laying underground telegraph-wires has just been devised by Messrs. Callender & Co. of London and New York, by which a hitherto unapproachable speed of signalling can be obtained on underground lines. If what is stated be correct (and there seems no reason to doubt it), the problem which has occupied some of our best electricians for some years has been successfully solved.

A movement is on foot to obtain government aid for the various 'university colleges' in the larger English towns. Similar colleges in Ireland and Scotland have long received such aid, and very recently three Welsh colleges have obtained grants of twenty thousand dollars per year each. The English colleges (in Manchester, Newcastle, Bristol, Birmingham, Liverpool, Leeds, etc.) are entirely without such help, and in some cases, notably in Bristol, they are in serious pecuniary

embarrassment. The excellent character of the scientific work done in many of them is justly adduced as a reason for the request.

Prof. A. W. Williamson, F.R.S., has just resigned the chair of chemistry at University college, London.

W.

London, March 7.

GEOGRAPHICAL NOTES.

Africa.

J. T. Last, commander of the London geographical society expedition to the Namuli Hills in East Africa, has sent a report of his trip to the south end of Lake Nyassa. Some of his remarks are of general interest. Starting from the mission station at Blantyre, he passed by Lake Shirwa, ascended Mount Zomba, which he found to be five thousand feet high, and visited the country of the Angoni, south-west of Lake Nyassa. He states that the district around Zomba proves to be very fertile. The English plantations in that district have fine crops of coffee. The culture of tea, cocoa, and arrowroot is being tried, and they promise to do well. On his way north he crossed the Shire, the eastern bank of which is quite uninhabited, while the western one is well-peopled and very fertile. As the kings of the Angoni and Yao — which latter live on the Shire — have made some terms of friendship, the petty wars between the tribes have ceased, and Last travelled without any trouble arising from this source. At the outlet of the Nyassa he encountered a low and sandy country with numerous patches that are covered with water during the wet season, salt being deposited when the water evaporates. The Angoni district, south-west of the Nyassa, forms a large plateau about five thousand feet high, which extends far west. In all this district there is scarcely a tree to be seen, and the fuel commonly used by the people is cornstalks and ox-dung. The land near the east is very poor, but as one proceeds towards the west it greatly improves in appearance, and in its western portions it is extensively cultivated. The expedition returned to Blantyre on the 1st of July. On the 12th they left again, and arrived at the Namuli Hills in August.

The Spanish traveller Sorela Fajardo arrived on the Senegal on Feb. 27. He proposes to cross the continent from west to east, starting from St. Louis in Senegambia.

America.

N. S. Shaler discusses in his paper on 'Fluvial swamps of New England' (*Amer. journ. sc.*, March, 1887) the formation of river-valleys in New England, more particularly in eastern Massachu-

setts. A comparison between the rivers flowing north and those running south shows a great difference in the character of their valleys. The former have excavated the glacial deposits which filled their valleys, and deposited alluvial plains that have distinct terraces. The erosion of the old deposits is still continuing. The rivers running south have excavated part of their glacial deposits, but the process ceased a long time since. None of them have sufficiently strong current to clear their beds from the detritus carried into them by floods from their tributaries, and coarse sediments are continually being deposited in their valleys. Shaler supposes that these plains were formed while the river was at a lower level than it is at present, and became swampy by the same changes on the drainage conditions which have so obstructed the flow of the stream. These facts tend to show that the northern slope of the valleys has been diminished. Thus the eroding force of the rivers which run south has increased, while that of those running north has so much decreased as to stop their eroding action. Shaler estimates the tilting of the land necessary to have this effect to be two feet to the mile, and concludes, from the well-known observations on submerged forests on the New England coast, that it consisted in a lowering of the southern part. The result of his researches as to the recent geological history of this district are that the uneven glacial banks were deposited while the land was submerged. When the ice retreated, a re-elevation took place, after which the glacial deposits were rapidly excavated. With the disappearance of the ice from the continent, the southern portion became lower again, and the latter movement produced the swampy character of the valleys of rivers running north by putting an end to the eroding action of their waters.

The Mississippi River commission has just issued a map of the alluvial valley of the Mississippi River from the head of St. Francis Basin (latitude 37° 20' north) to the Gulf of Mexico, showing lands subject to overflow, the location of levees, and trans-alluvial profiles, on a scale of five miles to an inch (1:316,800). The topography is reduced from detail maps and surveys made by the various government offices and railroads. The object of the map being to illustrate the floods of the Mississippi, the district which is subject to overflow is marked by brown hachure lines, the hydrography and lettering being printed in black. A great number of section-lines and the profiles belonging to them are embodied in the map. The profiles show the high-water line of 1882. Though these profiles are of a darker brown than that of the district subject to inundation, they somewhat dis-